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ABSTRACT

This paper outlines how to teach an introductory workshop about the Internet. It includes field-tested instruction and materials, training session agendas, exercises, materials for use with or without hands-on computer work, a pre-workshop needs assessment form, an instructor evaluation form, and Internet navigation exercises. Although the field test was implemented with graduate students, many of the materials and techniques may be adapted to younger learners. The materials were designed with a plan for teaching students basic computer network skills and information before going online. Since teaching about the Internet presents unique problems such as lack of Internet access and students with a broad range of computer skills and interests, the training accounts for these challenges in the following ways: (1) through the use of three separate training sessions (agendas), one without using computer hardware or software, a second using a computer, but not connected to the Internet, and another with online exercises for those students with a basic knowledge of the Internet; (2) through needs assessment forms which differentiate levels of learners' experience and determine what hardware, software and protocol is available to the user; (3) a workshop evaluation form; and (4) a technology training checklist. An appendix provides outlines of the three training agendas, the workshop evaluation form, a computer network interest survey, an introduction to and history of the Internet, and a list of world wide web (WWW) sites of interest to educators. (MAS)

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Training in the Use of the Internet

Rita M. Hauck

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Training in the Use of the Internet
Abstract

Training in the Use of the Internet was presented at the Association of Educational Communications and Technology National Convention, Anaheim, California, February 11, 1995, as a concurrent session of the National Association of Regional Media Centers. Rita Hauck is a doctoral student in the Department of Curriculum and Instruction at the University of Kansas. She holds a Master's degree in Education from California State University at Los Angeles and a Master's of Business Administration degree from Fort Hays State University. Presented at the session were field tested instruction and materials for an introductory workshop about the Internet for adults, including training session agendas, exercises, materials for use with or without "hands-on" computer work, a pre-workshop needs assessment form, an instructor evaluation form, and Internet navigation exercises. Materials were designed with a plan for students to learn basic computer network skills and information before going "on-line."

The following areas of Internet information are included in the curriculum:

1) Introduction and History of the Internet
2) Introduction to Internet Terminology and Protocol
3) Introduction to E-mail
4) Introduction to News Groups
5) Introduction to Information Retrieval
6) Introduction to the World-Wide Web, Hypertext, and Hypermedia
7) Introduction to Internet Access

Teaching about the Internet presents unique problems such as the chance of not being able to access the Internet on demand, and the likelihood of having students with a broad range of computer skills and interests. Training in the Use of the Internet approaches these challenges through use of the following materials:

1. Three separate training session agendas:
   a) Agenda 1 "Explanation and Discussion:" Materials to enhance learning and discussion about the Internet without using computer hardware or software.
   b) Agenda 2: "Computer Simulation Exercises:" Internet computer simulation exercises for learning about the Internet using a computer although not actually connected to the Internet.
   c) Agenda 3: "Navigation Exercises:" Exercises to use while "on-line" for people who have basic knowledge about the Internet.
2. Needs Assessment Form
   a) Assessment differentiates learners who have done some traveling on the Internet from those who have no Internet experience.
   b) Assessment determines what kinds of hardware, software, and protocol are available to the learners.
3. Evaluation Form
4. Technology Training Checklist

Introduction

Training in the Use of the Internet includes field tested instruction and materials for an introductory workshop about the Internet, including training session agendas, exercises, materials for use with or without "hands-on" computer work, a pre-workshop needs assessment form, an instructor evaluation form, and supplementary activities for fast learners. Materials were designed with a plan for students to learn basic computer network skills and information before going "on-line." A sample discussion enhancer, "What is the Internet?" is included in the appendix. The enhancer may be used for individuals or groups. The enhancers promote individualization of instruction and team-effort by providing the following opportunities:

1. Individuals or groups may select topics of interest.
2. Individuals or groups may read different topics and share, report, and exchange information with other individuals and groups.

A list of World Wide Web sites of interest to educators was provided by the University of Kansas computing center for this presentation and is included in the appendix as "World Wide Web " Netsurfing? You might be interested in . . ." (There are two ways to go to these sites on the Web. Go directly or go by following pre-determined links. In either case, a browsing tool such as Lynx, Mosaic, or Netscape is needed. If Lynx software is installed on your system, type g for "Go" anywhere in Lynx after entering the Lynx software program by typing "Lynx" at the UNIX prompt.)

Presentation Format

An ideal way to learn about technology is through one-on-one instruction which is not always feasible. An alternative is to learn through a workshop or seminar. The presentation format for an introductory workshop about the Internet recommended in this paper consists of materials for teaching about the Internet with or without using computers, and with or without being connected to the Internet. Agenda 1, "Explanation and Discussion," outlines a training session using exercises that do not require a computer. Agenda 2, "Computer Simulation Exercises," demonstrates a computer program that simulates on-line computer network access. The demonstration discussed in this paper used an IBM-compatible computer, and a liquid crystal display (LCD) panel with overhead projection. The computer demonstration consisted of teaching about the Internet using "Meet-Net," a beginning tutorial about the Internet, developed using Asymetrix Toolbook computer software application program, and SimuNet™ from Bridge Learning Systems, Inc. For information on either program, e-mail to rhauck@kuhub.cc.ukans.edu and bridge@crl.com, respectively.

Agenda 3, "Navigation Exercises," consists of an array of materials to use with fast learners, learners with Internet experience, and learners who have Internet access.

Learner Characteristics and Needs

In order to design appropriate instruction, the needs and interests of the learners must be considered. Survey of those needs may be done informally through discussion with members of the group, or more formally through the use of structured interviews or

surveys. A sample pre-assessment needs form is included in the appendix. The form helps the instructor know how much Internet experience the students have, their areas of interest, and the types of computer hardware and software available to them. Additionally, a survey may serve as a post-tutorial assessment of knowledge gained.

Curriculum Design

Although the field test for *Training in the Use of the Internet* was implemented with graduate students, many of the materials and techniques may be adapted to younger learners. Using computer programs that simulate networks, students experience "hands-on" learning without potentially threatening experiences of real networks such as limited access, scrambled files, complicated file headings, elaborate connections, and wayfinding problems.

Since network etiquette calls for limiting unnecessarily lengthy pauses in on-line connections, it is best to learn some basic computer network skills and information before going "on-line." Some local area networks automatically "log-off" after a pause of more than a couple of minutes of no activity. In a beginning learning situation, that has the potential for being very frustrating, not to mention the frustration of other people attempting to "log-on" to the network only to receive a busy signal.

Evaluation

Evaluation questions and worksheets are used to ensure that students have an opportunity to immediately reflect on their time spent in learning how to use the Internet.

Discussion

In his critique of the grounding assumptions underlying special and general education, Skrtic (1991) used four anti-foundational methodologies summarized as immanent critique, ideal type, deconstruction, and genealogy. His critique leads to a reconstruction of education in America based on an adhocratic approach of team problem-solving. As education is faced with various reform movements, the problem solvers are faced with many trends and issues, not the least of which is how to use technology in education. Skrtic's adhocracy approach provides a framework for examining how we are using and teaching technology in education. What patterns in educational technology are developing that will further inhibit education's ability to produce reflective, democratic citizens who rise above circumstances and take responsibility for their own learning? What are some assumptions we make about technological phenomena such as computer icons? The major thrust of *Training in the Use of the Internet* is that the individual learner's interests are considered, and that teachers and other professionals must team together to share materials and information that best meet those interests. Through the development process of *Training in the Use of the Internet*, consideration was given to making the technology subservient to the needs and interests of the teacher and the learners. Thus, opportunity for discussion was built into the curriculum design.

Ducharme (1988) stated that "pedagogy accompanying technological innovation must be developed," and teachers are the critical element and human variable in education "not regulated by buttons, electronic devices, cue cards, and computer

programs." Bichelmeyer (1991) reached a similar conclusion and stated that successful implementation of technology in education depends on teacher input in instructional design.

In light of the need for pedagogy to match technological change as well as the need for team problem-solvers as opposed to "experts" who pronounce from preconceived constructions, curriculum to teach computer network use is based on input from various groups of learners and educators. The curriculum and pedagogy is continuously evaluated and revised to meet specific needs and interests of each group and changes in technology.

Due to the nature of the technology itself, preparation for teaching and using technology may take longer than more traditional methods. Traditional preparation should be done as a back-up in the event of machine failure, and to provide students with some basic knowledge of a subject before sitting at a computer. Each machine used must be tested on the day of use in the teaching situation to ensure proper cable connections. Through prior practice, the teachers must feel comfortable with machine operation, trouble-shooting and technical connections or have immediate technical support.

Conclusion

Something akin to Murphy's Law is embedded in pedagogy to address technological innovation: If something might go wrong, it will go wrong. Teaching about the Internet presents unique problems such as the chance of not being able to access the Internet on demand. This presentation approaches these challenges

through use of the following materials:

1. Three separate training session agendas:
    a) Agenda 1 "Explanation and Discussion:" Materials for teaching about the Internet without using computer hardware or software.
    b) Agenda 2: "Computer Simulation Exercises:" Internet computer simulation exercises for learning about the Internet using a computer although not actually connected to the Internet.
    c) Agenda 3: "Navigation Exercises:" Exercises to use while "on-line" for people who have some knowledge about the Internet and access to the Internet.
2. Needs Assessment Form
    a) Assessment differentiates learners who have done some surfing on the Internet from those who have no Internet experience.
    b) Assessment determines what kinds of hardware, software, and protocol are available to the learners.
    c) Assessment helps keep the training session focused on learner needs and interests.
    d) Comparison of pre-assessment and post-assessment results helps to capture the amount of learning that took place, thus increasing confidence levels of teachers and students.
3. Evaluation Form
4. Technology Training Checklist

Checklist.

The following checklist may help identify potential problems.

1. Will the lights be off during the lecture portion of a slide show?
2. Are materials or programs available to simulate use of the technology?
3. When appropriate, is there a clear plan on paper for students to follow?
4. Would a "trouble-shooting" guide be appropriate or helpful?
5. What assumptions are made about the learners and technology? (Are we assuming that learners know about "system prompts," "function keys," and other computer terminology?)
6. Is there a hidden reliance on the technology to replace planning?

References

Bichelmeyer, B. A. (1991). Pilot implementation of an educational computer resource network: a naturalistic study. Unpublished doctoral dissertation, University of Kansas.

Ducharme, E. R. (1988). The purposes of American education today: concerns and assertions. Proceedings of the Association of Colleges and Schools of Education in State Universities and Land Grant Colleges.

Skrtic, T. M. (1991). The special education paradox: equity as the way to excellence. Harvard Educational Review, 61(2), 148-206.

Appendix

Agenda 1 - Explanation and Discussion

Introduction to the Internet

A. What is the Internet?
   1. World-wide communication
      a. Network of networks
      b. Information Superhighway
      c. National Information Infrastructure
      d. The Net
      e. Cyberspace
   2. Cable connections
      a. Telephone lines
      b. Fiber optic cable
      c. T1 lines and T3 backbone
   3. Purpose
      a. Information
      b. Interaction
   4. Discussion
      a. Student definitions of the Internet
      b. Student purposes and interests in using the Internet
      c. Other

B. How to Access the Internet (Worksheets or Overhead transparencies)
   1. Equipment Needs
      a. Computer Hardware
         (1) Computer
         (2) Modem
         (3) Cable connection
      b. Computer Software
         (1) On-line software such Procomm
         (2) Web browsers
   2. Service Needs
      a. Login account through membership at universities and other public and private organizations that have a local area network (LAN) connection to the Internet
      b. Commercial login account through companies such as CompuServe, Delphi, Genie, and America Online.

C. Terminology and Protocol

D. Current Topics

Agenda 2 - Meet the Internet using Meet-Net and SimuNet™

I. Meet-Net, a beginning Internet tutorial
   - A. What is the Internet?
     1. World-wide communication
     2. Brief History of the Beginning
        - a. Department of Defense
        - b. Four original computers at University of Utah, UCLA, UCSB, Stanford Research Institute
     3. Internet as an Information Source
     4. The Hunt (gopher.cic.net rgates@ccit.arizona.edu)
   - B. Beginning Terminology and Protocol
   - C. World Wide Web
     1. HTTP
     2. HTML
     3. Browsers
     4. Clients and Servers
     5. Hypermedia and hypertext
     6. NCSA Mosaic, Netscape, Lynx
   - D. Electronic Mail
     1. Remote access
     2. Login and logout process
     3. Sample of a mail program menu
     4. Sample of an e-mail message
     5. Basic needs for getting an e-mail account

II. SimuNet (Getting the feel of navigating the Net)
   - A. Introduction
   - B. Mail
   - C. FTP
   - D. Telnet
   - E. Archie and Others
   - F. Gopher, VERONICA & Others
   - G. Print, Upload, Download Files

Agenda 3 - Exercises for Navigating the Net

I. World Wide Web "Netsurfing? You might be interested in . . ."
II. Email
    A. Pine
    B. UNIX Mail
III. Talk
IV. Listserv
V. Telnet
VI. FTP
VII. Archie
VIII. Usenet
IX. KUfacts
X. Gopher
XI. The Hunt
XII. Other

Evaluation of Introductory Internet Workshop

1. Did you learn some basic information about the Internet?

2. Did you "navigate the Internet" by reaching another university or research institution?

3. Did you find an area of interest to you on the Internet?

4. Did you send and receive e-mail, transfer files, or talk on the Internet?

5. Did you learn about network protocol and software?

6. Did you learn about available Internet resources?

7. Was there time to discuss your network learning experiences?

8. Please recommend ways to improve this workshop.

Computer Network Interest Survey

This survey was designed to determine your approximate level of interest and knowledge about computer networks, including the Internet, Wide Area Networks (WANs) and Local Area Networks (LANs) in order to customize a seminar for you. Please check the appropriate boxes.

0.1 What computer do you use? ☐ IBM PC/compatible ☐ Apple ☐ Macintosh ☐ ____
0.2 Do you use a modem? ☐ yes ☐ no What make and speed? _____
0.3 Do you use electronic-mail and/or electronic bulletin boards? ☐ yes ☐ no
0.4 What service(s) and bulletin board(s) do you use? _____
0.5 Areas of primary interest (e.g., user groups, forums): _____

Select 1, 2, or 3, and 1 or 2, respectively, to indicate your level of knowledge and interest in the following topics:

	KNOWLEDGE			*INTEREST*	
NETWORK	NONE	KNOW ABOUT	HAVE USED	LEARN ABOUT	LEARN TO USE
1.1 Internet	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.2 Bitnet	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
PROTOCOL					
1.3 World Wide Web	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.4 FTP	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.5 Hypertext	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.6 POP	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
SOFTWARE					
1.7 Telnet	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.8 Mosaic	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.9 Eudora	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.10 Fetch	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.11 KUfacts	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.12 Gopher	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.13 CompuServe	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐
1.14 GEnie	1 ☐	2 ☐	3 ☐	1 ☐	2 ☐

If we can only cover 3 network topics in our seminar, which would you choose, in rank order?

2.01 _____
2.02 _____
2.03 _____

If you do not have an "e-mail" address, please stop by the Computer Center System Access office during business hours to obtain one.

Comments: _____

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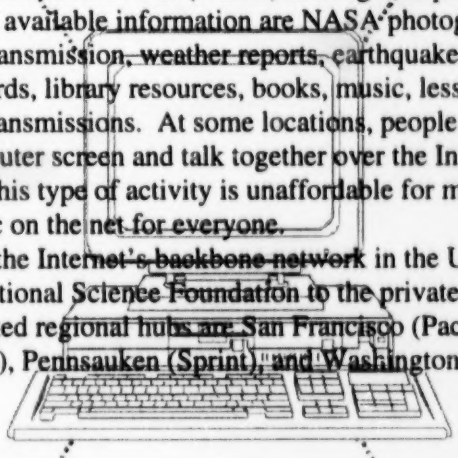
Introduction and History of the Internet

What is the Internet?

The Internet is world-wide communication via computers, literally a network of networks.Some of the names associated with the Internet in the United States are the Information Superhighway, the National Information Infrastructure, the Net, and Cyberspace. Often people are said to be "surfing or navigating the Net." Computers all around the world are connected by means of various kinds of cables such as telephone access lines, fiber optics, and T1, T2, and T3 backbone.

One of the main purposes of the Internet is to make information available to people around the world as quickly as possible. Through the Internet, a person can access computers and accessible information on those computers, and send electronic mail (e-mail) messages to people around the world. Examples of available information are NASA photographs updated hourly by satellite transmission, weather reports, earthquake data, news reports, bulletin boards, library resources, books, music, lesson plans, and compressed video transmissions. At some locations, people can view one another on the computer screen and talk together over the Internet. Some people believe that this type of activity is unaffordable for most people, yet "slows down" traffic on the net for everyone.



Funding for the Internet's backbone network in the United States is shifting from the National Science Foundation to the private sector. The new commercially operated regional hubs are San Francisco (Pacific Bell), Chicago (Ameritech), Pennsauken (Sprint), and Washington (Metropolitan Fiber Systems).

Discussion Questions:

1. How would *you* define the Internet?

2. How do *you* plan to use the Internet?

Netsurfing? - You might be interested in.....

Good starting points

Netscape home page:http://home.mcom.com/home/welcome.html
Kufacts (of course): http:/kufacts.cc.ukans.edu/cwis/kufacts_start.html
The best of the Web: http://wings.buffalo.edu/contest/
BBS- mother of:http: //www.cs.colorado.edu/homes/mcbryan/public_html/bb/summary.html
KU tour: http://www.sped.ukans.edu/campus/ku.html

Government

White House home Page: http://www.whitehouse.gov/white_house_home.html
US Bureau of Census: http://www.census.gov/
US Congress: http://thomas.loc.gov/
Index to government resources: http://nearnet.gnn.com/wic/govt.toc.html

Focus in Education

Learning about the Web: Text resources

World Wide Web for Dummies: http://www.mit.edu:8001/people/rei/wwwintro.html
WWW and Mosaic User's Guide: http://elib.cme.nist.gov/fasd/pubs/schlenoff94.html
Guide to Network Resource Tools: http://www.earn.net/gnrt/notice.html

Learning about the Web: Searching locations

World Wide Web Worm: http://www.cs.colorado.edu/home/mcbryan/WWWW.html
Stanford Yahoo: http://akebono.stanford.edu/yahoo/

Of interest at KU

SPED: http://www.sped.ukans.edu/welcome
UNITE: http://unite.tisl.ukans.edu/intro.html
KUCIA URouLette: http://kuhttp.cc.ukans.edu/cwis/organizations/kucia/uroulette/uroulette.html
History: http://history.cc.ukans.edu/history/instructions.html
KU video tour: http://www.sped.ukans.edu/campus/video.html
KU info: http://www.sped.ukans.edu/campus.ku.html

University Home Pages

University of Oregon: http://www.uoregon.edu
MIT: http://web.mit.edu
University of North Carolina: http://sunsite.unc.edu
and http://www.unc.edu/
Penn State: http://www.psu.edu/
Stanford:http://www.stanford.edu/

Research Grant Information

Felix and Molis: http://web.fre.com/
Army Research labs: http://info.arl.mil/
Disabilities list: gopher://info.umd.edu:901/11/inforM/Computing_Resources/
ComputersAndDisability/Internet/Listserv
Chronicles of Higher Education: http://chronicle.merit.edu/

Listseros

Http site: http://www.clark.net/pub/listserv/listserv.html
Usenet news: Send mail to LISTSERV@KSUVM the message LIST GLOBAL

Miscellaneous

Weather

http://rs560.cl.msu.edu/weather/nationalweather.txt
KU's meterology page: http://www.sped.ukans.edu/classes/kuweather/actual.html

Community pages (University of Colorado and the Boulder community)

http://bcn.boulder.co.us/

Museums

Chicago Field Museum: http://www.bvis.uic.edu/museum/
Exploratorium: http://www.exploratorium.edu/